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EXAMINER	
RUDE, TIMOTHY L	
ART UNIT	PAPER NUMBER
2871	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/026,477	YOO ET AL.	
	Examiner	Art Unit	
	Timothy L. Rude	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 15-25* is/are pending in the application.

4a) Of the above claim(s) *1 and 3-5* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims

Claim 15 is amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Yamazaki et al (Yamazaki) USPAT 5,815,226.

As to claim 15, Moon discloses in the 5th embodiment (col. 6, lines 8-63 and Figures 8A-8D) a liquid crystal display (LCD) device comprising:

a first substrate , 100; a second substrate;

a liquid crystal layer formed between the first and second substrates;

a storage capacitor, (combination of 4, 6, 1, 2, and unlabeled 9; col. 6, lines 10-30), formed in a first region of the first substrate;

a thin film transistor formed in a second region of the first substrate.

a gate electrode, 3, for the thin film transistor and a storage capacitor electrode, 4, spaced apart from the gate electrode [note it comprises the line running off Figure 5 on both sides], both formed on the first substrate;

a first insulating layer, 5, formed on the overall surface [col. 4, lines 1-13] of the first substrate [Applicant's formed on an entire surface of the first substrate];

a second insulating layer, 6, formed on the first insulating layer and the storage capacitor electrode;

a conductive layer (unlabeled layer between layers 2 and 10 above 4) formed on the second insulating layer overlapping the storage capacitor electrode in the first region; and

a pixel electrode (not shown, inherent to comprise functional device) electrically connected to the conductive layer (unlabeled layer between layers 2 and 10 above 4 in Figure 8D) and a drain electrode, 9, on the thin film transistor, wherein the length of the conductive layer is shorter than the length of the storage capacitor electrode, 4, per Figure 5.

Moon does not explicitly disclose removing a first insulating layer, 5, formed on an entire surface of the first substrate exclusively from an upper portion of the storage capacitor electrode. However, the teachings of Moon are considered to render the claimed invention obvious to those having ordinary skill in the art of liquid crystals, since there is no disclosed functional significance to the minor structural difference as claimed in either Moon or Applicant's enabling disclosure.

In considering the disclosure of a reference it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01).

Furthermore, election of species should not be required if the species claimed are considered clearly unpatentable (obvious) over each other (MPEP 808.01(a)). Applicant's specification teaches removal of the first insulating layer from above the capacitor electrode, but it does not explicitly teach retention of the first insulating layer everywhere else. Applicant has merely indicated removal of the first insulating layer

from above the capacitor electrode is required to comprise the claimed invention (as does Moon), so alternate species wherein the first insulating layer is retained or eliminated from other regions are considered clearly unpatentable (obvious) over each other since they are not explicitly precluded by Applicant's specification and since there is no teaching as to the significance of one over the other in either Moon or Applicant's enabling disclosure. Both Applicant and the applied prior art, Moon, teach the same advantage of a thinned insulator above the capacitor electrode and any subtle species variation(s) are considered obvious species variations that are unpatentable over each other (MPEP 808.01(a)). Furthermore, it is well known in the art that removal of an insulation layer takes time, effort, and cost, so one would be inclined to remove only that minimal portion. Alternately, some elect to expend the additional time, effort, and cost, to remove unnecessary insulation layer(s) from the pixel region in order to slightly improve optical performance. Such cost vs performance trade-offs are well known in the art at the time the claimed invention was made, which reinforces examiner's position that they are obvious species variations. In this case, Applicant's species is the lower cost species while the applied prior art teaches the higher optical performance species.

Moon is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to remove the first insulating layer from the capacitor electrode to facilitate formation of a capacitor with increased capacity and thereby allow the improvement of aperture ratio [col. 4, lines 14-30], regardless of whether one chooses to remove the first insulating layer from anywhere else.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the removal of the first insulating layer from the capacitor electrode (exclusively or in conjunction with removal from other areas, e.g., pixel area) to facilitate formation of a capacitor with increased capacity and thereby allow the improvement of aperture ratio.

FIG.8D

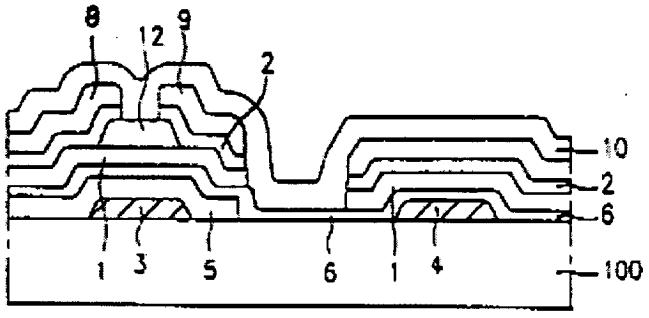
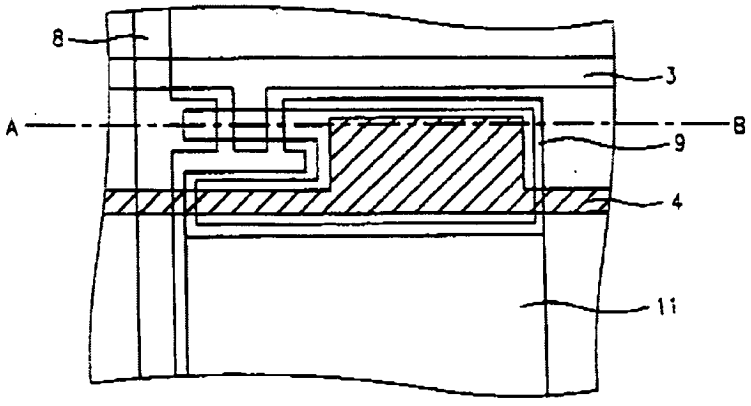


FIG.5



As to newly added limitations:

Yamazaki teaches the advantages [col. 10, lines 1-19] of making the conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

Examiner considers this structure to also read on Applicant's newly added limitations drawn to a conductive layer formed on the second insulating layer overlapping the storage capacitor electrode except both side portions of the storage capacitor electrode in the first region [as shown in Figure 7B]. Examiner also considers the portion of 607 close to electrode 603 to be a distinctly different structure on a distinctly different layer level than the pixel electrode portion of 607 that lies on top of insulating layers 317 and 315. It is very common in the art to consider differing parts of a single formed layer to be distinctly different structures having different functions and different names, for example, gate lines, gate electrodes, gate interconnect lines, gate dummy lines, and gate pads are routinely considered different structures with different functions, referred to by those different names, even though they are all made simultaneously from the same layer of the same material (and they are usually all on the same layer level).

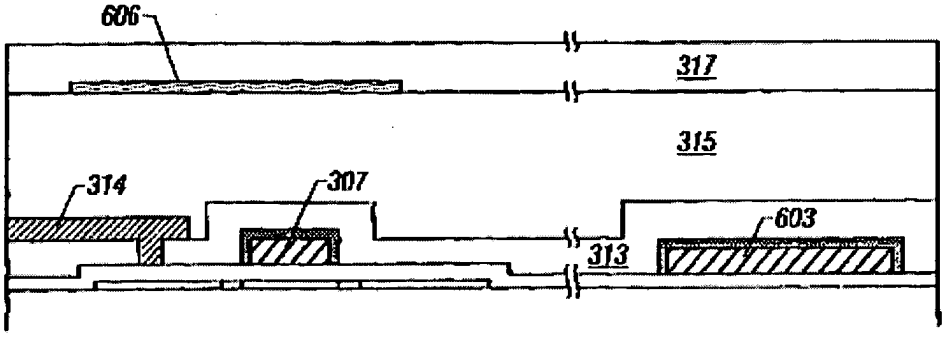


Figure 7A

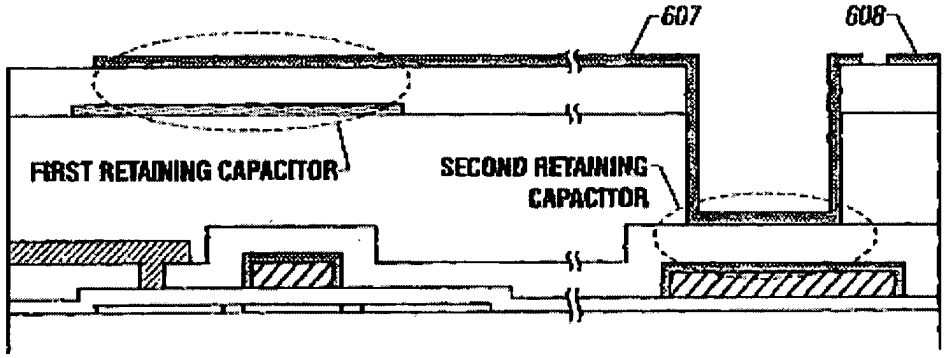


Figure 7B

Yamazaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to make the conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention with a conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor

electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

As to claim 16, Moon in view of Yamazaki disclose the device above.

Moon does not explicitly disclose a device wherein the gate insulating layer of the first region, 6 (Applicant's second insulating layer), has a thickness in a range of about 100Å~4000Å.

Moon teaches the purpose of removing the first insulating layer (Applicant's thinner insulating layer in the first region) is to increase the value of capacitance to allow increased viewing angle (Title and col. 6, lines 30-40) which constitutes a results effective variable.

Moon is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to reduce the gate insulating layer thickness of the first region to a thickness in a range of about 100Å~4000Å to increase the value of capacitance to allow increased viewing angle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the reduced gate insulating layer thickness of the first region to a range of about 100Å~4000Å to increase the value of capacitance to allow increased viewing angle.

As to claim 17, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 15, further comprising a semiconductor layer, 1, formed above the

second insulating layer in the second region and used as a channel of the thin film transistor.

As to claim 18, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 17, further comprising a source electrode, 8, and a drain electrode, 9, opposing each other and formed above the semiconductor layer.

As to claim 19, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, wherein the conductive layer (unlabeled 9 between 2 and 10) is of the same material as the source and drain electrodes and formed on the second insulating layer in the first region.

As to claim 20, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, further comprising an ohmic contact layer, 2, formed at an interface between the source and drain electrodes and the semiconductor layer.

As to claim 21, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, further comprising a passivation layer, 10, having a contact hole and formed on an entire surface including the conductive layer and the source and drain electrodes to expose upper portions of the drain electrode and the conductive layer.

As to claim 22, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 21, wherein the pixel electrode electrically connects to the drain electrode and the conductive layer through the contact hole (inherent to a functional device and obvious to those having ordinary skill in the art given the other embodiments of Moon).

2. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Yamazaki, as applied to claims above, in view of Hwang USPAT 6,545,730 B1.

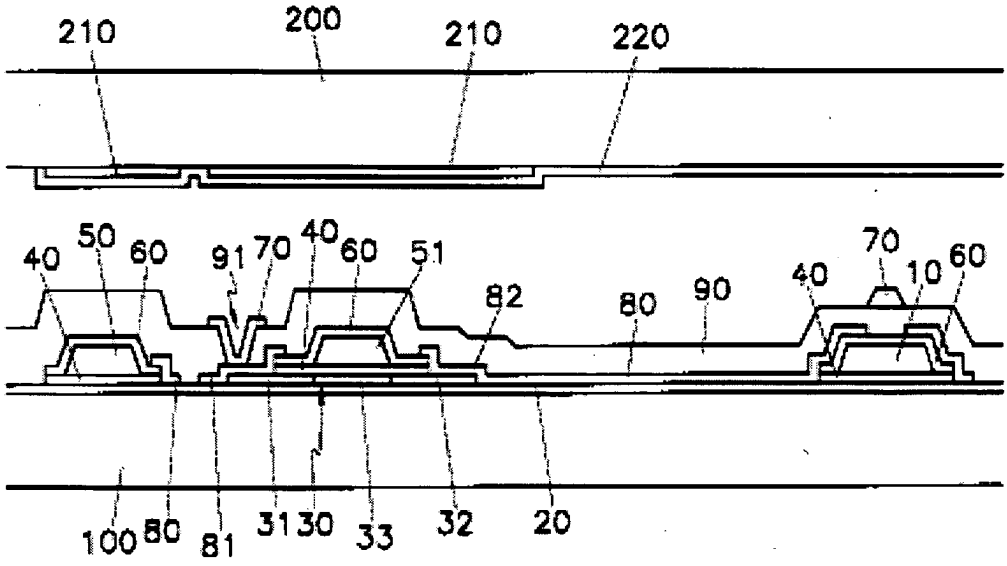
As to claims 23-25, Moon in view of Yamazaki discloses the LCD device as claimed in claim 15.

Moon does not explicitly disclose a device wherein the second substrate further includes: a plurality of Red (R), green (G), and blue (B) color filter patterns formed on the second substrate opposite to the first substrate for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer, however this is well known in the art.

For example, Hwang teaches in the background of the invention, and in the first preferred embodiment, a second substrate, 200, comprising a plurality of Red (R), green (G), and blue (B) color filter patterns (col. 1, lines 26-33 and col. 2, lines 22-28;

and Figure 2) for displaying colors; a black matrix, 210, for dividing the respective color filter patterns and for shielding light; and a common electrode, 220, for applying a voltage to the liquid crystal layer formed on the entire surface (col. 3, lines 24-26) including the black matrix and the color filter patterns, to achieve good color display performance with good contrast and good aperture ratio.

FIG.2



Hwang is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a second substrate comprising a plurality of Red (R), green (G), and blue (B) color filter patterns for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer formed on the entire surface

including the black matrix and the color filter patterns, to achieve good color display performance with good contrast and good aperture ratio.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the second substrate comprising a plurality of Red (R), green (G), and blue (B) color filter patterns for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer formed on the entire surface including the black matrix and the color filter patterns of Hwang to achieve good color display performance with good contrast and good aperture ratio.

3. Claims 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Yoshikawa et al (Yoshikawa) USPAT 6,106,907 and further in view of Yamazaki et al (Yamazaki) USPAT 5,815,226.

As to claim 15, Moon discloses in the 5th embodiment (col. 6, lines 8-63 and Figures 8A-8D) a liquid crystal display (LCD) device comprising:
a first substrate , 100; a second substrate;
a liquid crystal layer formed between the first and second substrates;
a storage capacitor, (combination of 4, 6, 1, 2, and unlabeled 9; col. 6, lines 10-30), formed in a first region of the first substrate;
a thin film transistor formed in a second region of the first substrate.

a gate electrode, 3, for the thin film transistor and a storage capacitor electrode, 4, spaced apart from the gate electrode [note it comprises the line running off Figure 5 on both sides], both formed on the first substrate;

a first insulating layer, 5, formed on the overall surface [col. 4, lines 1-13] of the first substrate [Applicant's formed on an entire surface of the first substrate];

a second insulating layer, 6, formed on the first insulating layer and the storage capacitor electrode;

a conductive layer (unlabeled layer between layers 2 and 10 above 4) formed on the second insulating layer overlapping the storage capacitor electrode in the first region; and

a pixel electrode (not shown, inherent to comprise functional device) electrically connected to the conductive layer (unlabeled layer between layers 2 and 10 above 4 in Figure 8D) and a drain electrode, 9, on the thin film transistor, wherein the length of the conductive layer is shorter than the length of the storage capacitor electrode, 4, per Figure 5.

Moon does not explicitly disclose removing a first insulating layer, 5, formed on an entire surface of the first substrate exclusively from an upper portion of the storage capacitor electrode. However, the teachings of Moon are considered to render the claimed invention obvious to those having ordinary skill in the art of liquid crystals, since there is no disclosed functional significance to the minor structural difference as claimed in either Moon or Applicant's enabling disclosure.

In considering the disclosure of a reference it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01).

Furthermore, election of species should not be required if the species claimed are considered clearly unpatentable (obvious) over each other (MPEP 808.01(a)). Applicant's specification teaches removal of the first insulating layer from above the capacitor electrode, but it does not explicitly teach retention of the first insulating layer everywhere else. Applicant has merely indicated removal of the first insulating layer from above the capacitor electrode is required to comprise the claimed invention (as does Moon), so alternate species wherein the first insulating layer is retained or eliminated from other regions are considered clearly unpatentable (obvious) over each other since they are not explicitly precluded by Applicant's specification and since there is no teaching as to the significance of one over the other in either Moon or Applicant's enabling disclosure. Both Applicant and the applied prior art, Moon, teach the same advantage of a thinned insulator above the capacitor electrode and any subtle species variation(s) are considered obvious species variations that are unpatentable over each other (MPEP 808.01(a)). Furthermore, it is well known in the art that removal of an insulation layer takes time, effort, and cost, so one would be inclined to remove only that minimal portion. Alternately, some elect to expend the additional time, effort, and cost, to remove unnecessary insulation layer(s) from the pixel region in order to slightly improve optical performance. Such cost vs performance trade-offs are well known in the art at the time the claimed invention was made, which reinforces examiner's position

that they are obvious species variations. In this case, Applicant's species is the lower cost species while the applied prior art teaches the higher optical performance species.

Moon is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to remove the first insulating layer from the capacitor electrode to facilitate formation of a capacitor with increased capacity and thereby allow the improvement of aperture ratio [col. 4, lines 14-30], regardless of whether one chooses to remove the first insulating layer from anywhere else.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the removal of the first insulating layer from the capacitor electrode (exclusively or in conjunction with removal from other areas, e.g., pixel area) to facilitate formation of a capacitor with increased capacity and thereby allow the improvement of aperture ratio.

Additionally, it was well known in the art at the time the claimed invention was made that etching drives manufacturing cost. Therefore, minimizing the amount of material to be removed by etching will extend the useful life of the etchant [less material etched = less etchant used] and thereby provide the desired benefit of reducing production costs. In support of this well know fact, Yoshikawa is applied.

Yoshikawa teaches numerous issues regarding the costs of required etching, including the commonly used practice to recover and reuse etchant as much as possible despite "etchant fatigue" in order to minimize waste/pollution and to achieve the desired reduction in production costs [col. 5, lines 31-60].

Yoshikawa is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to minimize etchant fatique by etching only that which is truly required to be etched [removal of first insulating layer only from above the storage capacitor electrode as needed to improve capacitance, results in Applicant's "a first insulating layer formed on an entire surface of the first substrate except an upper portion of the storage capacitor electrode"] in order to minimize waste/pollution and to achieve the desired reduction in production costs [col. 5, lines 31-60].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Moon by minimizing etchant fatique by etching only that which is truly required to be etched [removal of first insulating layer only from above the storage capacitor electrode as needed to improve capacitance, results in Applicant's structure "a first insulating layer formed on an entire surface of the first substrate except an upper portion of the storage capacitor electrode"; less insulating layer etched = less etchant fatigue] of Yoshikawa in order to minimize waste/pollution and to achieve the desired reduction in production costs [col. 5, lines 31-60].

FIG.8D

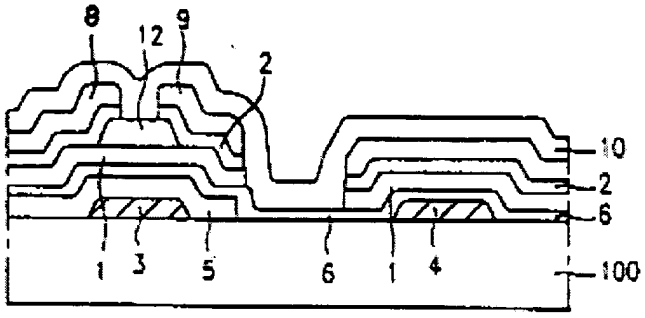
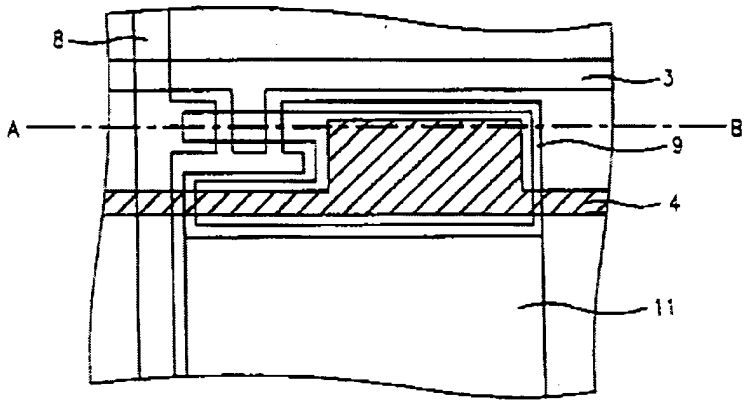


FIG.5



As to newly added limitations:

Yamazaki teaches the advantages [col. 10, lines 1-19] of making the conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

Examiner considers this structure to also read on Applicant's newly added limitations drawn to a conductive layer formed on the second insulating layer overlapping the storage capacitor electrode except both side portions of the storage

capacitor electrode in the first region [as shown in Figure 7B]. Examiner also considers the portion of 607 close to electrode 603 to be a distinctly different structure on a distinctly different layer level than the pixel electrode portion of 607 that lies on top of insulating layers 317 and 315. It is very common in the art to consider differing parts of a single formed layer to be distinctly different structures having different functions and different names, for example, gate lines, gate electrodes, gate interconnect lines, gate dummy lines, and gate pads are routinely considered different structures with different functions, referred to by those different names, even though they are all made simultaneously from the same layer of the same material (and they are usually all on the same layer level).

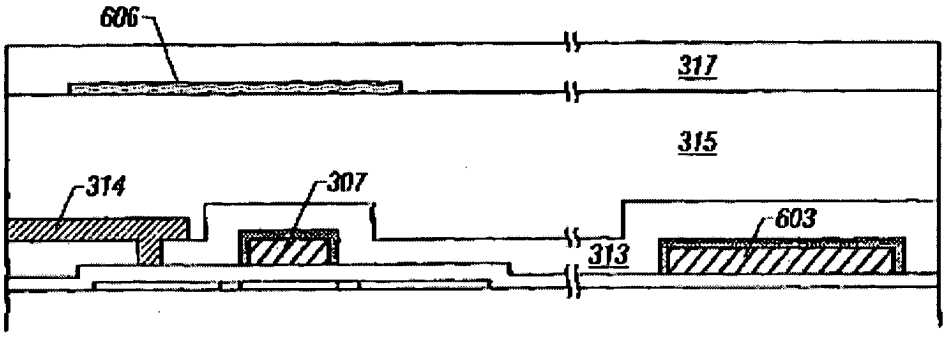


Figure 7A

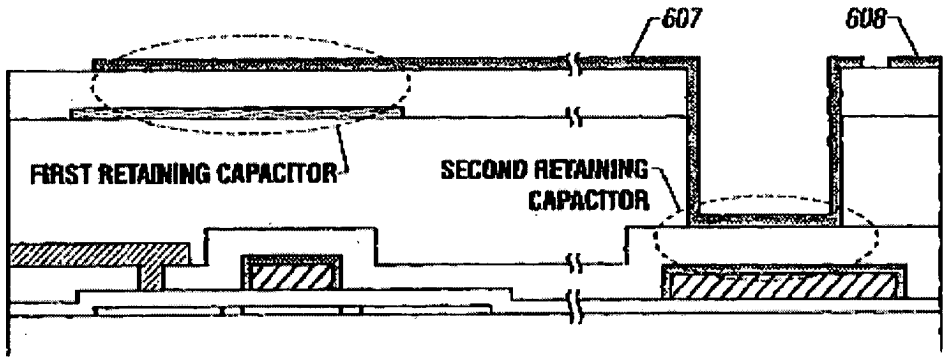


Figure 7B

Yamazaki is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to make the conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention with a conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor

electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

As to claim 16, Moon in view of Yoshikawa and Yamazaki disclose the device above.

Moon does not explicitly disclose a device wherein the gate insulating layer of the first region, 6 (Applicant's second insulating layer), has a thickness in a range of about 100Å~4000Å.

Moon teaches the purpose of removing the first insulating layer (Applicant's thinner insulating layer in the first region) is to increase the value of capacitance to allow increased viewing angle (Title and col. 6, lines 30-40) which constitutes a results effective variable.

Moon is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to reduce the gate insulating layer thickness of the first region to a thickness in a range of about 100Å~4000Å to increase the value of capacitance to allow increased viewing angle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the reduced gate insulating layer thickness of the first region to a range of about 100Å~4000Å to increase the value of capacitance to allow increased viewing angle.

As to claim 17, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 15, further comprising a semiconductor layer, 1, formed above the second insulating layer in the second region and used as a channel of the thin film transistor.

As to claim 18, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 17, further comprising a source electrode, 8, and a drain electrode, 9, opposing each other and formed above the semiconductor layer.

As to claim 19, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, wherein the conductive layer (unlabeled 9 between 2 and 10) is of the same material as the source and drain electrodes and formed on the second insulating layer in the first region.

As to claim 20, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, further comprising an ohmic contact layer, 2, formed at an interface between the source and drain electrodes and the semiconductor layer.

As to claim 21, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 18, further comprising a passivation layer, 10, having a contact hole and formed on an entire surface including the conductive layer and the source and drain electrodes to expose upper portions of the drain electrode and the conductive layer.

As to claim 22, Moon discloses in Figure 8D the liquid crystal display device as claimed in claim 21, wherein the pixel electrode electrically connects to the drain electrode and the conductive layer through the contact hole (inherent to a functional device and obvious to those having ordinary skill in the art given the other embodiments of Moon).

4. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Yoshikawa and Yamazaki, as applied to claims above, in view of Hwang USPAT 6,545,730 B1.

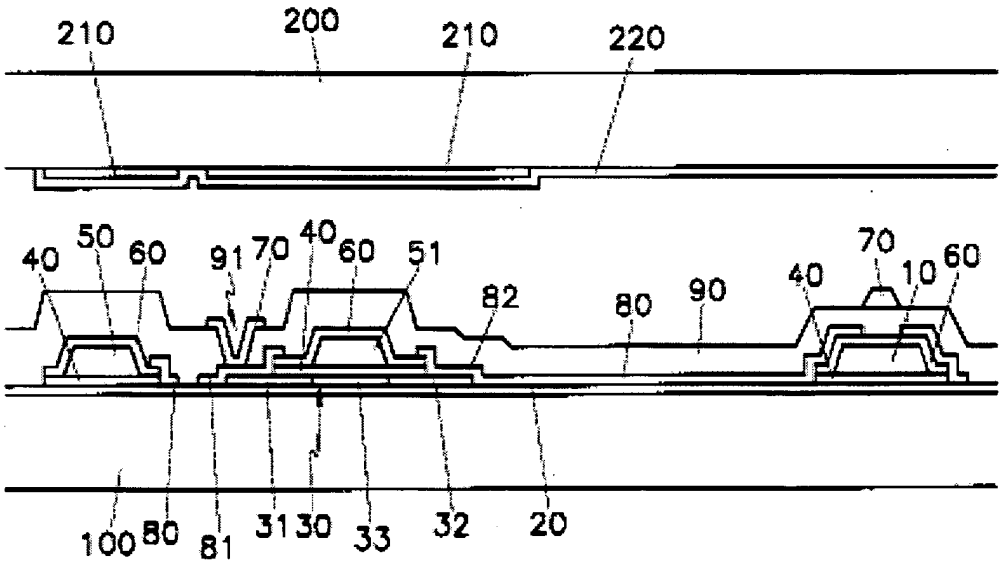
As to claims 23-25, Moon in view of Yoshikawa and Yamazaki discloses the LCD device as claimed in claim 15.

Moon does not explicitly disclose a device wherein the second substrate further includes: a plurality of Red (R), green (G), and blue (B) color filter patterns formed on the second substrate opposite to the first substrate for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer, however this is well known in the art.

For example, Hwang teaches in the background of the invention, and in the first preferred embodiment, a second substrate, 200, comprising a plurality of Red (R),

green (G), and blue (B) color filter patterns (col. 1, lines 26-33 and col. 2, lines 22-28; and Figure 2) for displaying colors; a black matrix, 210, for dividing the respective color filter patterns and for shielding light; and a common electrode, 220, for applying a voltage to the liquid crystal layer formed on the entire surface (col. 3, lines 24-26) including the black matrix and the color filter patterns, to achieve good color display performance with good contrast and good aperture ratio.

FIG.2



Hwang is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a second substrate comprising a plurality of Red (R), green (G), and blue (B) color filter patterns for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer formed on the entire surface

including the black matrix and the color filter patterns, to achieve good color display performance with good contrast and good aperture ratio.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Moon with the second substrate comprising a plurality of Red (R), green (G), and blue (B) color filter patterns for displaying colors; a black matrix for dividing the respective color filter patterns and for shielding light; and a common electrode for applying a voltage to the liquid crystal layer formed on the entire surface including the black matrix and the color filter patterns of Hwang to achieve good color display performance with good contrast and good aperture ratio.

Response to Arguments

Applicant's arguments filed on 30 October 2007 have been fully considered but they are not persuasive.

Applicant's ONLY substantive arguments are as follows:

(1) Regarding base claim 15, applied prior art does not teach newly added limitations.

(2) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Yamazaki teaches the advantages [col. 10, lines 1-19] of making the conductive layer width shorter [portion of 607 close to electrode 603] than the width of the storage capacitor electrode in order to maximize aperture ratio while still achieving needed capacitance with a thinner insulating layer [removed portions of 317 and 315].

Examiner considers this structure to also read on Applicant's newly added limitations drawn to a conductive layer formed on the second insulating layer overlapping the storage capacitor electrode except both side portions of the storage capacitor electrode in the first region [as shown in Figure 7B]. Examiner also considers the portion of 607 close to electrode 603 to be a distinctly different structure on a distinctly different layer level than the pixel electrode portion of 607 that lies on top of insulating layers 317 and 315. It is very common in the art to consider differing parts of a single formed layer to be distinctly different structures having different functions and different names, for example, gate lines, gate electrodes, gate interconnect lines, gate dummy lines, and gate pads are routinely considered different structures with different functions, referred to by those different names, even though they are all made simultaneously from the same layer of the same material (and they are usually all on the same layer level). Naturally, we properly reject based upon structure, not based upon the names given to structure.

(2) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Any references cited but not applied are relevant to the instant Application.

Conclusion

Any references cited but not applied are relevant to the instant Application.

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION Could Have Been MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). As a courtesy, examiner has made this action non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy L Rude
Examiner
Art Unit 2871

tlr

1/20/08